

BIRDSO Invitational 2021



Ornithology Division C

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Link to audio files:

https://drive.google.com/drive/folders/12FMBwNLTMmMrWJLyJoy8SoIK_KlABw8c?usp=sharing

Names: _____ Total: _____ /234

STATION 1 (12 pt)

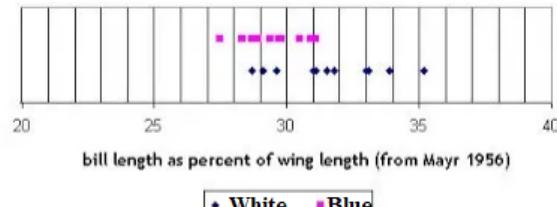


1. **1 pt.** Identify the bird above by its common name.
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** What is the main reason that this bird migrates?
 - a. Frozen water prevents the bird from reaching its food source
 - b. It follows its food source upstream and congregates around these areas
 - c. It migrates southward to find ideal nesting locations
 - d. These birds require specific temperatures for maintenance of internal body heat
4. **1 pt.** These birds primarily use what sense to feed?
 - a. Touch
 - b. Vision
 - c. Hearing
 - d. Smell
 - e. Taste
5. **1 pt.** This bird, with its overall larger stature, can capture much heavier fish compared to other species in its family. Therefore, multiple species that eat the same food groups are able to coexist in one area. What is the term given to this phenomenon? (2 words)
6. **1 pt.** Explain how birds with longer necks like this one are well-adapted to their environment.
 - a. They adapted longer necks to offset their adaptation of longer legs (which keep their bodies/feathers high above and dry from the water).
 - b. Their longer necks provide predatory advantages to compensate for their weakened eyesight.
 - c. Their longer necks are a useful adaptation alongside their longer legs for defense displays against potential predators (intimidating by size).
 - c. The neck allows for a counterbalance to their body weight because their legs are set far forward on the body to assist in walking on land.
7. **2 pt.** What is the name of the greyish-tinted anatomical structure indicated by the red arrow? What is its function? Answer in 1 sentence.

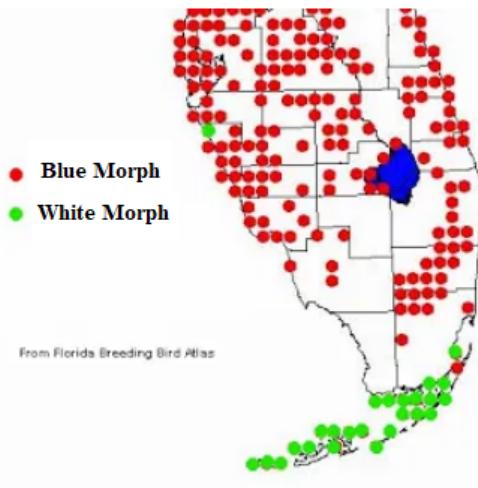
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Evidence A. Blue morph and white morph perched together on a tree.



Evidence B. Figure showing the bill length vs. wing length of both the blue and the white morph.



Evidence C. Map outlining the distribution of both the blue and the white morphs in the state of Florida.



Evidence D. The Wurdemann morph, considered a viable and unsterile hybrid of the blue and white morph.

"Mate Choice was not random with respect to plumage color. I observed more white/white and blue/blue pairs and fewer mixed pairs than expected in a randomly mating population." - Heather Louise McGuire

Evidence E. A quote extracted from a research paper studying the incidence and mating style of the blue and white morph in the state of Florida.

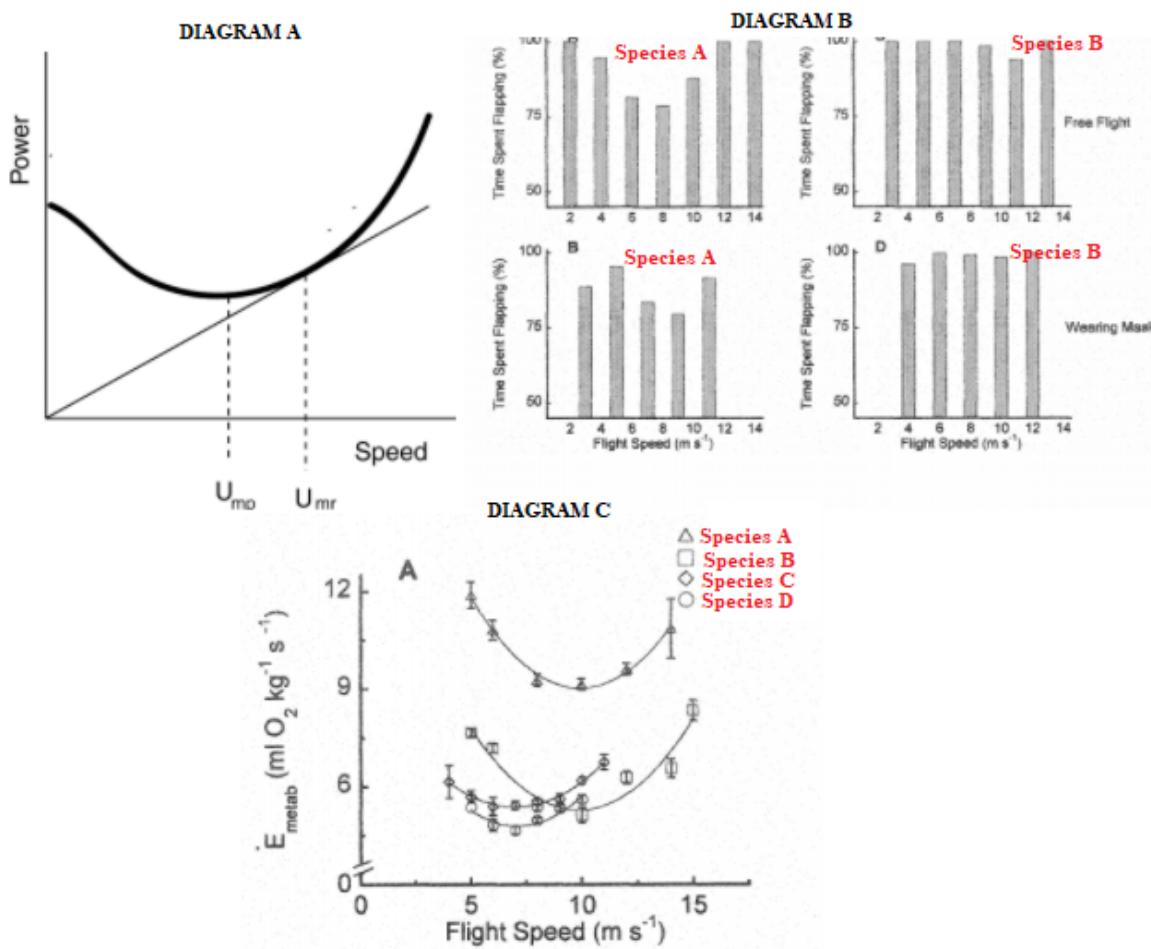
8. **4 pt.** Many ornithologists disagree on whether the white morph is actually a separate species. Using at least 2 pieces of evidence above, construct an argument on whether these are different species or not. Label the pieces of evidence you used to come to your conclusion, not all must be used. Answer in 2-3 sentences.

STATION 2 (13 pt)



1. **1 pt.** Identify the bird above by its common name.
2. **1 pt.** Identify the bird above by its scientific name.
3. **2 pt.** What are functions of the white wing patches on these birds? Select all that apply.
 - a. Functions in attracting mates during courtship
 - b. Displayed in acts of aggression
 - c. Used to assert dominance hierarchies between males of this species
 - d. Used to identify dead birds of the same species to hold “bird funerals”
4. **1 pt.** These birds are known to be especially impacted by a specific type of zoonotic, mosquito-borne disease, and outbreaks of this illness can be described to cause “hundreds of dead birds to fall from the sky”. Name the disease.

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<https://youtu.be/SP6JBuub-eY>

Above is a video of this bird flying in a flight tunnel in the University of Montana flight lab (optional watch, but still very cool). The purpose of this experiment was to determine how the muscle functions and energy kinetics of this bird are altered by different variables (ex. the influence of masks or the speed of the wind in the flight tunnel). Answer the following questions based off of the information provided above.

5. Diagram A shows the power curve of most birds (comparing flight speed vs power exerted). Three important components of flight must be considered when creating a power curve: induced power due to lift generation, parasitic power (i.e. drag created from non-lifting parts of the body), and profile power (i.e. drag created by the wings).
 - a. **2 pt** Outline how each of these components will be affected as speed increases.
 - b. **1 pt** Explain why there is a dip in the power curve resulting in a U-shaped graph rather than a straight line.
 - c. **1 pt** Would profile power be higher in a flapping wing or a fixed wing?
 - d. **1 pt** Generally, what does U_{mp} show?
6. **2 pts.** According to Diagram B, how do the flight patterns of Species A and Species B differ? Is the bird in question (9) most likely Species A or Species B?
7. **1 pt.** Do the power curves shown in Diagram C match the generalized power curve in Diagram A? If there are any differences, explain.

STATION 3 (12 pt)



1. **1 pt.** Identify the bird above by its common name.
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** The picture above shows a:
 - a. Male
 - b. Female
 - c. Immature
 - d. Impossible to tell
4. **2 pt.** Which of the following best describes what happens to the chicks of this species when the females do not return to the nest for an extended period of time?
 - a. They are able to survive long enough to fledge due to their high basal metabolic rate, independent of whether the female returns or not
 - b. All responsibility of parental care is placed on the father until the female returns
 - c. They are extremely altricial to the point where they die within hours of the female going missing
 - d. They go into an induced torpor state until the female returns
5. **2 pt.** Why is this species non-migratory, unlike other birds of the same family?

Say that you are performing an experiment on this species of bird. You have captured six specimens and kept all physical aspects of their cage the exact same. However, you changed the following variables in each bird's cage:

	Specimen A	Specimen B	Specimen C	Specimen D	Specimen E	Specimen F
Independent Variable	N/A (Control)	Increased social interaction with other birds	Increased food source	Decreased food source	Increased exposure to simulated "daylight"	Increased temperature to replicate average summer temperatures
Dependent Variable	Gonadal Development	→	→	→	→	→
Constants	No social interaction Normal day-night cycle Normal food amount Constant Temperature	Normal day-night cycle Normal food amount Constant Temperature	No social interaction Normal day-night cycle Constant Temperature	No social interaction Normal day-night cycle Constant Temperature	No social interaction Normal food amount Constant Temperature	No social interaction Normal food amount Normal day-night cycle

For the following statements, choose either increased, decreased, or the same based on the information shown in the table above.

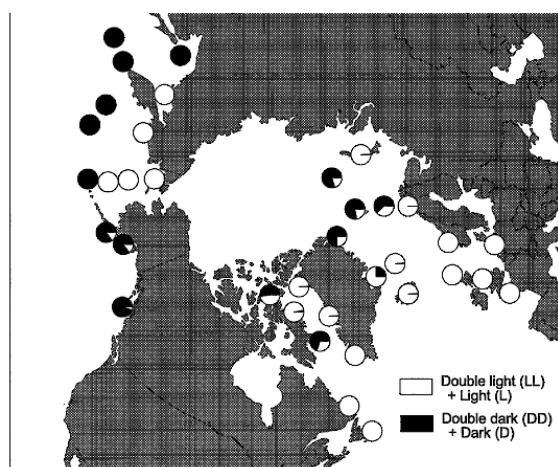
- a. **0.5 pt.** Specimen B will show an **increased/decreased/the same** level of gonadal development in comparison to Specimen A.
 - i. Increased
 - ii. Decreased
 - iii. The same
- b. **0.5 pt.** Specimen C will show an **increased/decreased/the same** level of gonadal development in comparison to Specimen A.
 - i. Increased
 - ii. Decreased
 - iii. The same
- c. **0.5 pt.** Specimen D will show an **increased/decreased/the same** level of gonadal development in comparison to Specimen A.
 - i. Increased
 - ii. Decreased
 - iii. The same
- d. **0.5 pt.** Specimen E will show an **increased/decreased/the same** level of gonadal development in comparison to Specimen A.
 - i. Increased
 - ii. Decreased
 - iii. The same
- e. **0.5 pt.** Specimen F will show an **increased/decreased/the same** level of gonadal development in comparison to Specimen A.
 - i. Increased
 - ii. Decreased
 - iii. The same
- f. **0.5 pt.** Specimen C will show an **increased/decreased/the same** level of gonadal development in comparison to Specimen F.
 - i. Increased
 - ii. Decreased
 - iii. The same

7. 2 pt. Out of the variables presented in the table above, determine the single variable which would likely have the largest impact on the gonadal development of an individual. Explain why in 1 sentence.

STATION 4 (11 pt)



1. **1 pt.** Identify the bird above by its common name.
2. **1 pt** Identify the bird above by its scientific name.
3. **1 pt.** Members of this species have stinky-smelling _____ (two words), which is stored in their proventriculus and spit out at intruders.
4. **1 pt.** These birds primarily use what sense to feed?
 - a. Touch
 - b. Vision
 - c. Hearing
 - d. Smell
 - e. Taste
5. **2 pt.** Name the structure indicated by the red arrow in the image above. What is its main function?
6. **2 pt.** Do you predict the bill size of the bird populations living in northern parts of the Atlantic to be larger or smaller than their more southern counterparts? What is the name of this ecological rule?



Look at the graph provided above, showing the distribution of the two color morphs of this species (dark and light). Answer the following questions.

7. **1 pt.** How exactly do the dark and light morphs differ physically?
8. **2 pt.** True or False: the distribution of these two morphs is a very good reflection of Gloger's rule.

STATION 5 (13 pt)



1. **1 pt.** Identify the bird above by its common name
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** What is the name of the region that is colored red on males?
4. **1 pt.** T/F: This bird will join in mobbing calls and mobbing with other birds.
5. **1 pt.** What do the bristles around this bird's beak protect it from?
6. **1 pt.** What foot arrangement does this bird have?
7. **2 pt.** How does this bird's method of foraging on trees differ between summer and winter? 2040
8. **2 pt.** Suet is a favorite food of this bird. What does it consist of and what purpose does it serve?



9. **2 pt.** The picture above has the hairy woodpecker on the left and the bird of our station on the right. Evidence shows that the hairy woodpecker is an extremely aggressive species, especially towards those sharing its niche, often harassing them over territory and food sources. Based on the image, explain how the bird on the right evolved to circumvent this issue.

STATION 6 (12.5)

<https://youtu.be/cJWqKsG39bE>

1. **1 pt.** Identify the bird above by its common name.
2. **1pt.** Identify the bird above by its scientific name.
3. **2 pt.** What is the name of the behavior being performed by the bird in the video? Why do they engage in this behavior?



4. **1 pt.** Which one of the two birds above (A or B) is a female?
5. **2 pt.** Some male birds of prey are extremely aggressive towards females of the same species, and can even go as far as killing fellow birds, which can lead to conflicts during pair bonding. What unique characteristic have the females of this species developed to prevent this issue? How does this specifically help the females?
6. Answer the following questions about general bird population dynamics.
 - a. **1 pt.** What are the two general factors which can directly decrease the density of a population in a given location?
 - b. **2 pt.** Which of the following factors can slow down the growth rate of a population composed of individuals of the species from this station? Select all that apply.
 - i. Increase of lakes with insufficient food supply due to overfishing
 - ii. Decrease of open woodland habitats
 - iii. Influx of other birds of prey in the environment
 - iv. Seasonal mass migration
 - v. Male abandonment of mate and chicks after hatching
 - vi. Convergence of overall chick size and mass
7. Determine whether the following species on the National Bird List would likely have a uniform, random, or clumped population dispersion.
 - a. **0.5 pt.** Laysan Albatross
 - b. **0.5 pt.** Herring Gull
 - c. **0.5 pt.** Northern Mockingbird
 - d. **0.5 pt.** Blue Jay
 - e. **0.5 pt.** Double-Crested Cormorant

STATION 7 (11 pt)

1. **1 pt.** Identify the bird in the audio clip by its common name.
2. **1 pt.** Identify the bird in the audio clip by its scientific name.
3. **1 pt.** You're birdwatching one day, and hear this distinctive call, to see a bird flying above you. You can see that it has a black head. Is this bird a nonbreeding or breeding adult?
 - a. Breeding
 - b. Nonbreeding
4. **1 pt.** Describe how these birds are kleptoparasitic feeders in one sentence.
5. **2 pt.** Melanin can be found in high concentrations in the wingtips of this bird. **Explain** one reason why it is *specifically* ideal for these birds and other birds that live in their *habitats* to have increased levels of melanin (other than camouflage).
6. On April 20, 2010, the *Deepwater Horizon* semi-submersible Mobile Offshore Drilling Unit exploded, and subsequently lit on fire, resulting in a massive oil spill in the Gulf of Mexico. According to the Executive Report to the National Response Team, there were approximately 4.9 million barrels of oil discharged. Response teams subsequently rushed to protect the surrounding areas and affected species, ultimately removing millions of pounds of oil. BP, which owned the drilling unit, eventually paid \$18.7 billion in fines.
 - a. **2 pt.** Explain one possible indirect health risk to these birds from consuming fish toxic with oil.
 - b. **1 pt.** Birds' livers can process normal amounts of lipid-soluble molecules. Give an example of this occurrence in normal circumstances.
 - c. **3 pt.** How are birds' diets generally modified following liver damage? Why would it be challenging for these birds to obtain these benefits without human assistance? (outside of the fact that all of their food is, unfortunately, soaked oil)

STATION 8 (12 pt)



1. **1 pt.** Identify the birds above by their common name (singular).
2. **1 pt.** Identify the birds above by their scientific name.
3. **1 pt.** True or False: These birds can swallow berries whole.
4. **1 pt.** When these birds court, the males often give a small gift to the female bird. They then pass this gift back and forth, until the female finally does what?
5. **2 pt.** Consider this bird's nesting behaviors. Listen to the audio clips in each of the answer choices below. What call may *this* bird hear/encounter while trying to quickly collect nest materials?
 - a. Audio A
 - b. Audio B
 - c. Audio C
 - d. Audio D
6. **2 pt.** Consider the following situation and information: These birds are voracious eaters, and therefore have adapted to this behavior by possessing an esophagus that is partially expandable due to internal pressure. What does voracious eater mean? What is the term for an organ that is able to expand in this manner?
7. Unfortunately, these birds have begun eating more ornamental and invasive plants which may contain harmful compounds such as cyanide. If they eat the berries of these plants in excessive amounts, or while overripe, these birds may become intoxicated. The substances that produce this cyanide (a process called cyanogenesis) are called cyanide glycosides, and reside in most parts of certain plants where they are present. Cool and moist environments encourage these plants to convert nitrate to cyanide glycosides and other substances rather than to proteins.
 - a. **2 pt.** Explain two different reasons why these birds are especially susceptible to cyanide poisoning/intoxication. Consider the seasonal variations in their diets.
 - b. **2 pt.** Cyanide is harmful mainly because it inhibits the enzyme cytochrome oxidase, which is necessary in mitochondrial respiration, as well as several other enzymes. Hypothesize an explanation for the bright red blood characteristic in these birds when poisoned by cyanide.

STATION 9 (11 pt)



1. **1 pt.** Identify the bird above by its common name (singular).
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** When does the male bird incubate the eggs, and when does the female bird incubate the eggs?
 - a. Only the female incubates the eggs
 - b. Mid-morning to late afternoon; afternoon to mid-morning
 - c. Afternoon to mid-morning; mid-morning to late afternoon
 - d. Mid-day to night; night to mid-day



4. **2 pt.** What domesticated descendant of this bird was famously utilized in World War II to deliver messages by many countries? (One noteworthy example is G.I. Joe, known for flying twenty miles in only twenty minutes in order to save over 100 men during World War II. He is pictured above.)
5. **2 pt.** Some volunteers help these birds by unwinding hair, thread, and other materials caught around their feet. How do these materials hurt these birds' well-being? Why are these birds especially susceptible to this unfortunate situation?

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6. A study published in the 2019 issue of *Toxicology and Environmental Safety* journal studied the impacts of Imidacloprid (IMI) insecticides on this bird, specifically on their brains and livers. Forty mature male birds were split into four groups, consisting of a control group (given a type of corn oil), a low dose (LD), a medium dose (MD), and of a high dose (HD) group. The experimental groups were given IMI in a type of corn oil. This resulted in a dose related increase for some substances, a dose related decrease for some substances. The researchers also found traces and clusters of IMI in certain tissues and organs. Observe the chart below:

Parameters Groups	Total protein (g/dl)	Albumin (g/dl)	Globulin (g/dl)	Uric acid (mg/dl)
C	7.68±0.18	4.94±0.08	2.79±0.15	5.82±0.07
LD	7.62±0.17	4.98±0.1	2.64±0.11	5.95±0.06
MD	7.50±0.11	4.86±0.05	2.63±0.11	6.20±0.05
HD	7.10±0.06	4.89±0.04	2.46±0.15	6.72±0.04

- a. **2 pt.** Given that the values in the charts are means \pm SE for the four different groups, which parameter shows a significant increase (assume significance) after IMI exposure? Hypothesize a possible explanation for this.
- b. **2 pt.** Based on your answer to 6, hypothesize which organ may have accumulated larger amounts of IMI and *why*.

STATION 10 (15 pt)



1. **1 pt.** Identify Specimen A by its common name.
2. **1 pt.** True or False: This bird never uses its pouch for carrying food across long distances.
3. **1 pt.** What is the name of the fibrous plate on Specimen A's upper mandible? (Hint: it falls off after mating season is over)
4. **2 pt.** Describe this bird's method of eating. How does it use its pouch? How does it eat food?
5. **1 pt.** Identify Specimen B by its common name.
6. **1 pt.** True or False: Specimen B can breathe while foraging.
7. **1 pt.** What is it called when members of a flock fly at each other and beat their wings?
8. **1 pt.** True or False: Specimen A is heavier and larger than Specimen B.
9. **2 pt.** Which of the following are true for both Specimen A and Specimen B?
 - a. Fly with outstretched necks
 - b. The young are born blind
 - c. Can tolerate brackish and saltwater environments
 - d. Eat yellow perch and jackfish
 - e. Can live for more than 15 years
10. **4 pt.** Studies measuring mercury Specimen A and B were conducted in Nevada and Florida, respectively. In most cases, they compared adult mercury concentrations to fledgling or nestling concentrations in the same habitat to measure accumulation of mercury due to their diets over time. Identify and explain which ecological phenomenon explains why mercury accumulation is of such concern in piscivores. Based on this phenomenon, would Specimen A or Specimen B be likely to have higher levels of mercury?
Thoroughly explain why.

STATION 11 (12 pt)



1. **1 pt.** Identify the bird above by its common name.
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** What do these birds eat?
 - a. Crayfish, rabbits, squirrels, swallows
 - b. Bats, owls, opossums, snakes
 - c. Snakes, insects, moles, snappers
 - d. Crayfish, moles, owls, acorns
4. **1 pt.** Which of the following is true about these birds but not other New World owls?
 - a. They have less of an anterior incline of the procoracoid.
 - b. Their call has three or fewer hoots per second.
 - c. They have full feathering on their feet rather than partial bristling.
 - d. These birds' ancestors developed for much longer in the Americas than the scops owls did.
5. **3 pt.** This bird is one of the birds currently protected by the Migratory Bird Treaty Act. In recent years, there has been a push for this act to be rolled back, but the current presidential administration has decided to delay rolling the act back. List two distinct reasons why we should care about this act (as you should!).
6. **2 pt.** How does puffing up one's feathers as shown in the image above aid in thermoregulation?
7. **3 pt.** Although feathers aid in thermoregulation, bird legs and feet are (usually) naked and unfeathered – this adorable bird is an exception! Describe the physiological process that prevents certain birds' feet, such as in the Order Anseriformes, from getting too cold.

STATION 12 (16pts)



1. **1 pt.** Identify the bird above by its common name.
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** What do these birds do with their throat region to dissipate heat? (two words)
4. **1 pt.** This bird is the state bird of which state?
5. **2 pt.** Which of the following are predators of this bird? Select all that apply.
 - a. Rat Snakes
 - b. Cats
 - c. Skunks
 - d. Coyotes
 - e. Bull Snakes
6. **4 pt.** Describe what this bird does when a predator approaches the nest.
7. **3 pt.** How does this bird handle raising chicks? Why does it raise chicks in this way? Which chicks have an advantage in survival?
8. **3 pt.** This animal is known to eat venomous prey like rattlesnakes and the infamous tarantula hawk wasp, and are therefore resistant to their venom. Why is it advantageous for this bird, or any bird, to develop such a specific adaptation?

STATION 13 (13 pts)



1. **1 pt.** Identify the birds above by their common name (singular).
2. **1 pt.** Identify the birds above by their scientific name.
3. **1 pt.** Are these birds monogamous or polygamous? Do both parents care for the offspring or does only one parent care for the offspring?
 - a. Monogamous; both parents
 - b. Polygamous; both parents
 - c. Monogamous; one parent
 - d. Polygamous; one parent



Bird B



Bird C



Bird D

Consider the bird you identified in question 1 as Bird A when answering questions 4-5 below.

4. **2 pt.** Which of these birds are precocial? Select all that apply.
 - a. Bird A
 - b. Bird B
 - c. Bird C
 - d. Bird D
5. **1 pt.** These birds may migrate through all of the four major flyaways.
 - a. Birds A and B
 - b. Birds A, B, and C
 - c. Birds A, B, and D
 - d. Birds A, B, C, and D
6. These birds are well known for their aggressive behaviors, and like most birds, especially during nesting periods.
 - a. **2 pt.** Do parents become more aggressive or less aggressive as their young in their nest get older? Why does this happen?

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- b. **2 pt.** During what type of situation will these birds *honk*? During what type of situation will these birds *hiss*?



7. Observe the stressed Tom Hanks above. Tom Hanks starred in the film *Sully*, which delved into the story of the Miracle on the Hudson (a famous incident of a bird strike plane accident). Since then, there has been intensive research on the nature of bird strikes.
- a. **3 pt.** According to the Federal Aviation Administration, the threat to human safety due to aircraft collisions with birds has been increasing since 1988, as air traffic has increased. Hypothesize one possible explanation for this specific to birds' relationships with humans/technology.

STATION 14 (11pts)



1. **1 pt.** Identify the bird above by its common name.
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** What is the meaning of this bird's specific epithet?
4. **1 pt.** This species has at least 13 different types of calls; however, they are difficult to distinguish by ear, so ornithologists often use a _____, a computer-generated graph which shows the basic shape of the audio wave.
5. **2 pt.** Which of the following will prey on the **nests** of this bird (not the bird itself)?
 - a. Snakes
 - b. Squirrels
 - c. Chipmunks
 - d. Raccoons
 - e. Bears
 - f. Foxes
6. **1 pt.** Which of the following most closely describes this bird's territorial song?
 - a. whink-whink-whink
 - b. siiiiiiiiiiiiiiiiii
 - c. Chep-Chep-Chep
 - d. ple-BLEEP-ple-BLEEP-ple-BLEEP
 - e. tsip-tsip-tsip
 - f. TEA-cher-TEA-cher-TEA-cher
7. **4 pt.** A study done in Algonquin Park, Ontario revealed how outbreaks of a specific insect in this bird's habitat can greatly affect their nesting. What is this insect and how does it impact the bird's environment? What specifically does this bird do as a result of these outbreaks and why?

STATION 15 (13.5pts)



1. **2 pt.** Identify Specimen A and Specimen B by their common names.
2. **1.5 pt.** What are the three types of calls Specimen A makes (alphabetical)?
3. **2 pt.** Which of the following would be included in Specimen A's nest?
 - a. Lichen
 - b. Bark
 - c. Leaves
 - d. Needles
 - e. Spider webs
 - f. Animal hair
4. **1 pt.** After what event do the young of Specimen B begin to forage on their own?
5. **1 pt.** True or False: The seet-seet call of Specimen B is more commonly heard than its song.
6. **2 pt.** Which of the following are true?
 - a. A eats berries more than B
 - b. A's nests are higher up than B's
 - c. A migrates later in the fall and arrives earlier in the spring than B
 - d. Both birds have populations which are permanent residents
 - e. A breeds farther north than B
7. **4 pt.** A study conducted in 1984 studied the differences in foraging between Specimen A and Specimen B. These birds differed most significantly in their method of prey, tree selection, and location. In each of these three categories, identify the differences between Specimen A and Specimen B. Then, name and describe the theory which explains these differences.

STATION 16 (13pts)

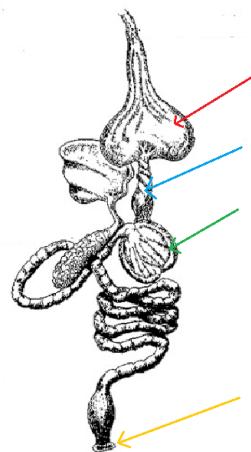


1. **1 pt.** Identify the bird above by its common name.
2. **1 pt.** Identify the bird above by its scientific name.
3. **1 pt.** The image above shows a ...
 - a. Male adult
 - b. Female adult
 - c. Juvenile
 - d. No way to tell
4. **1 pt.** What is the mating system of this bird?
5. **1 pt.** This bird is dominant in breeding marshes over which bird (common name)?
6. **1 pt.** This bird is susceptible to nest predation by which bird (common name)?
7. **2 pt.** How does a flock of these birds forage?
8. **1 pt.** In terms of conservation, name at least one thing this bird is sensitive to.
9. **4 pt.** Describe what environment this bird nests in. Then, identify what adaptation the young have to this environment and why.

STATION 17 (14 pts)



1. **1 pt.** Identify the bird above by its common name.
2. **1 pt** Identify the bird above by its scientific name.
3. **2 pt.** Select which options best describe this species' nests. Select all that apply.
 - a. Oval-shaped depressions made in dead grasses
 - b. Nests covered with a dome-like aggregation of grass, forming a canopy
 - c. Often found next to a water source such as a small pond/marsh, river, or lake
 - d. Nest on the dense upper canopy of trees in order to prevent low-roaming predators
4. **1 pt.** When alarmed, these birds take off in short bursts of flight; this is called a _____.
5. **2 pt.** You are dissecting this bird for your Ornithology class at BIRDSO University. As you cut open the chest, you reveal a pair of large, square-ish, rather white muscles connected to the base of each wing. Identify this muscle. Why is this muscle white rather than the characteristic reddish color of many other birds?



6. Continuing your dissection, you take some pictures that you can include in your BIRDSO lab report. Your three professors (Dr. Alisa, Dr. Bhavna, and Dr. Sophia) have drawn arrows to the parts of your bird that they would like you to identify. Write down the body part corresponding to each colored arrow below. (these aren't real pictures of a dissected bird because that's a sad thing to add on an orni test so we just put in diagrams instead. You are welcome!)
 - a. **0.5 pt.** Red Arrow
 - b. **0.5 pt.** Blue Arrow
 - c. **0.5 pt.** Green Arrow
 - d. **0.5 pt.** Yellow Arrow

(Station continued on next page)

7. For each of the following functions, state the color of the arrow which is pointing to the matching anatomical structure. (i.e., write either red, blue, green, or yellow in the blanks.) Colors may be used more than once or not at all.
- 0.5 pt.** Aids in the chemical degradation of nutrients
 - 0.5 pt.** Used for the storage of food prior to its digestion
 - 0.5 pt.** Contains stones and pebbles (aka grit) which aid in the physical grinding of ingested food
 - 0.5 pt.** The external opening of a bird's digestive system which doubles as a canal to their sex organs
8. **2 pt.** Explain one way in which avian lungs are far superior to human lungs (this is just a fact). Answer in 1 sentence.
9. **1 pt.** Humans completely circulate air through their lungs in one breath (inspiration + expiration), while birds do so in _____ breath(s).
- One
 - Two
 - Three
 - Four

STATION 18 - LIGHTNING ROUND (20 pts)

Identify each of the following birds by their common name only.



A



B



C



D



E



F



G



H



I



J



K



L

Identify the calls by common name (located in the Google Drive folder) in the designated spaces on your answer sheet.